CLAIMS

1. A magnetizing device for superconductor, the magnetizing device being characterized by comprising:

(a) a superconductor;

(b) cooling means for cooling the superconductor down to or below a critical temperature at which the transition to a superconducting state occurs;

(c) magnetic field generating means that generates a magnetic field equal to or higher than a critical magnetic field in which the intrusion of a magnetic flux into the superconductor starts, around the superconductor cooled down to or below the critical temperature at which the transition to the superconducting state occurs; and

(d) position modification means capable of arranging the superconductor outside a coil as an element constituting the magnetic field generating means, and modifying the relative positional relationship between the superconductor and the coil.

2. The magnetizing device for superconductor according to Claim 1,

wherein the position modification means is disposed on the fixed sides as the magnetic field generating means; and

wherein the superconductor can be disposed by the position modification means so as to be sandwiched between a pair of opposing coils.

3. The magnetizing device for superconductor according to Claim 2, wherein the superconductor is a high temperature superconductor arranged on a rotating plate.

4. The magnetizing device for superconductor according to Claim 2, wherein each of the pair of coils is formed as a spiral shape coil opposed to a surface of the superconductor.

5. A superconducting synchronous machine characterized by comprising:

(a) a superconductor arranged on a disk;

(b) cooling means for cooling the superconductor down to or below a critical temperature at which the transition to a superconducting state occurs;

(c) magnetic field generating means that generates a magnetic field equal to or higher than a critical magnetic field in which the intrusion of a magnetic flux into the superconductor starts, around the superconductor cooled down to or below the critical temperature at which the transition to the superconducting state occurs;

(d) an alternating current power source for supplying the magnetic field generating means with a current for driving the superconductor; and

(e) a mode changeover switch for performing a changeover between the magnetic field generation mode and an alternating current supply mode.

6. A superconducting synchronous machine characterized by

comprising:

(a) a superconductor arranged on a disk;

(b) cooling means for cooling the superconductor down to or below a critical temperature at which the transition to a superconducting state occurs;

(c) magnetic field generating means that generates a magnetic field equal to or higher than a critical magnetic field in which the intrusion of a magnetic flux into the superconductor starts, around the superconductor cooled down to or below the critical temperature at which the transition to the superconducting state occurs;

(d) a prime mover for rotationally driving the disk with the superconductor provided thereon; and

(e) a mode changeover switch for performing a changeover between the magnetic field generation mode and a power generation mode.

7. A superconducting synchronous machine characterized by comprising:

(a) a superconductor arranged on a disk;

(b) cooling means for cooling the superconductor down to or below a critical temperature at which the transition to a superconducting state occurs;

(c) magnetic field generating means that generates a magnetic field equal to or higher than a critical magnetic field in which the intrusion of a magnetic flux into the

superconductor starts, around the superconductor cooled down to or below the critical temperature at which the transition to the superconducting state occurs;

(d) an alternating current power source for supplying the magnetic field generating means with a current for driving the superconductor;

(e) a prime mover for rotationally driving the disk with the superconductor provided thereon; and

(f) a mode changeover switch for performing a changeover among the magnetic field generation mode, an alternating current supply mode, and a power generation mode.

8. The superconducting synchronous machine according to Claim 5, 6, or 7, further comprising a sensor for detecting the strength of a magnetic field of the superconductor to thereby control the magnetization of the superconductor.

9. The superconducting synchronous machine according to Claim 5, 6, or 7,

wherein the magnetic field generating means is disposed on the fixed sides; and

wherein the superconductor can be disposed so as to be sandwiched between a pair of opposing armature coils.

10. The superconducting synchronous machine according to Claim 9, wherein each of the pair of coils is formed as a spiral shape coil opposed to a surface of the superconductor.

11. The superconducting synchronous machine according to

Claim 9,

wherein the number of the pairs of armature coils is an integral multiple of three; and

wherein the number of the superconductors is an integral multiple of two.

12. The superconducting synchronous machine according to Claim 5, 6, or 7, wherein the superconductor is a high temperature superconductor.

13. The superconducting synchronous machine according to Claim 5, 6, or 7, wherein the disk is cooled down by the cooling means.